

**System and Method for  
Solving a Large System of Dense Linear Equations**

**ABSTRACT**

5 A method and system for solving a large system of  
dense linear equations using a system having a processing  
unit and one or more secondary processing units that can  
access a common memory for sharing data. A set of  
coefficients corresponding to a system of linear equations  
is received, and the coefficients, after being placed in  
10 matrix form, are divided into blocks and loaded into the  
common memory. Each of the processors is programmed to  
perform matrix operations on individual blocks to solve the  
linear equations. A table containing a list of the matrix  
operations is created in the common memory to keep track of  
15 the operations that have been performed and the operations  
that are still pending. SPUs determine whether tasks are  
pending, access the coefficients by accessing the common  
memory, perform the required, and store the result back in  
the common memory for the result to be accessible by the PU  
20 and the other SPUs.